SOIL conservation

U. S. Department of Agriculture / Soil Conservation Service / November 1975

From the Administrator

Soils: Limitations vs. Potentials

In years past, the tables in a published soil survey have told a land user about his soils mainly in terms of their "limitations." A survey might describe a particular soil as having "moderate limitations" for crops or "severe limitations" for a septic tank filter field. Discouraging news for the farmer or homeowner who already owns the land and must make use of it!

The fact is, of course, that many soils, even those with "severe limitations," can be made to serve if the land user is willing to spend money to modify the soil, plan special designs, or adjust his way of operating.

In future surveys, the Soil Conservation Service will emphasize a more positive approach called "soil potentials." We are going to give the land user more information about soil behavior so that he can better plan and evaluate alternative uses of his soil. New surveys will still warn of "limitations," but they also will describe ways to correct those limitations.

A farmer faced with "severe limitations" for cropland may discover that his sloping acres can be used for corn and small grains under no-till farming. Or he may turn to parallel terraces with tile drain outlets to make them usable.

Another farmer may discover "wet" soils in part of a field can be serviceable for crops if he installs tile drains—and that the increase in yield will offset the cost of drainage.

A rural householder with soil too shallow for a septic tank filter field—and no hope of getting town sewage—may discover that he can get around his problem by building up a mound of permeable soil and setting his tank on top.

The new surveys also will offer builders, developers, and county officials more alternatives in planning future projects. In the past, developers have concentrated on soils with "slight limitations" for construction. Many of these soils also are prime farmland and should be left in crops. Since soil surveys will henceforth give planners more detailed information about building on soils with moderate or severe limitations, planners can weigh alternatives more realistically before taking Class I and II land out of agriculture.

This positive approach—the "soil potentials" approach—should increase the usefulness of published soil surveys to the people who use them and to the SCS field people who assist them.

SOIL conservation

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Earl L. Butz
Secretary of Agriculture

R. M. Davis, Administrator
Soil Conservation Service

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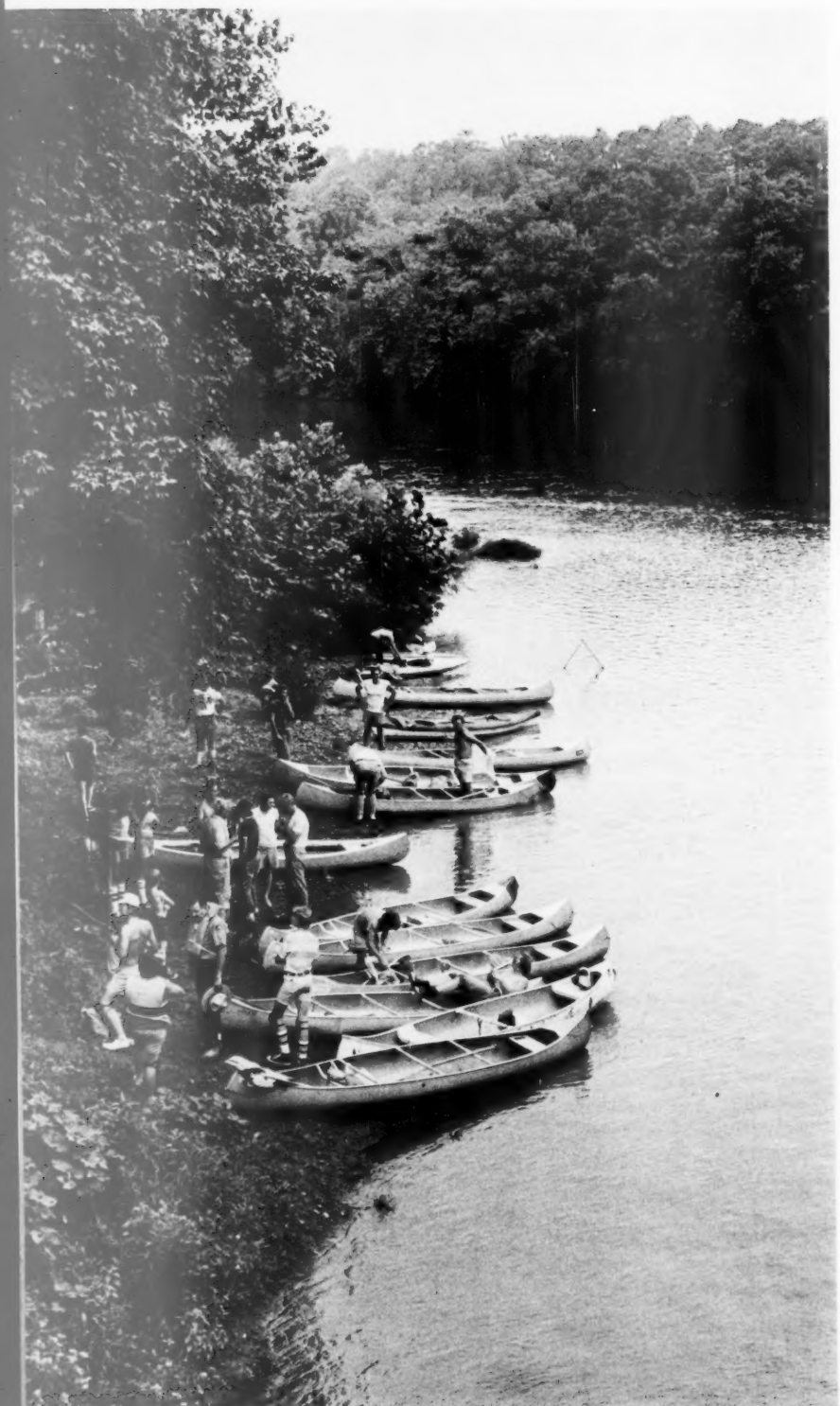


To travel a river from its source to the sea—discovering its pageantry, meeting its people and witnessing its problems—is to understand a region and its environment in the most intimate sense.

In August, five high school students selected from conservation districts within the Potomac River Basin completed a month-long journey down the Potomac River from its source at Fairfax Stone, West Virginia, to Point Lookout, Maryland, where the river enters the Chesapeake Bay.

In an effort to focus on the natural, historic, and ethnic riches of the Potomac as well as define specific environmental problems plaguing the 385-mile river, the students, accompanying a throng of conservationists, traveled by foot, horse, canoe, bicycle, coal train, boat, and bus during the trip.

The Interstate Commission on the Potomac River Basin spearheaded the contest for students to participate in a trip that would be both a unique

The group put in at Antietam Creek, stopping long enough for lunch and to hear a brief history of the area from a National Park Service representative.

Paddling on the Potomac

by Debra Arlean Tate

Information Division, SCS, Washington, D.C.

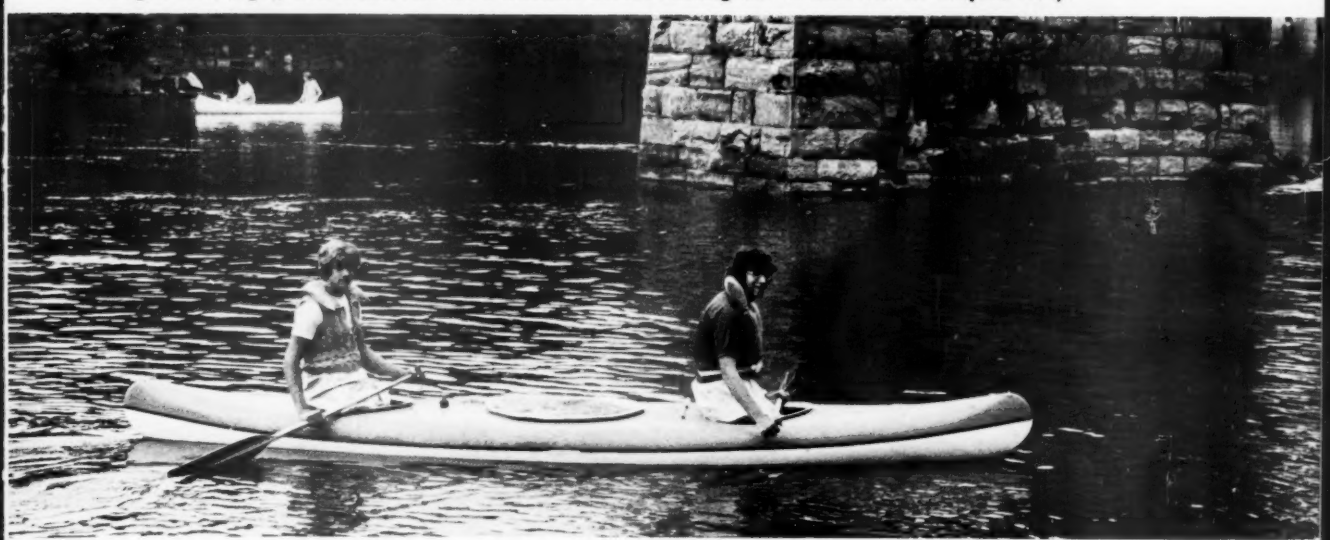
educational bonanza and the 20th century answer to a Mark Twain adventure. Anne Blackburn, public education specialist for the commission, explained that after much discussion over a student selection method, the commission decided "that the conservation districts offered an excellent vehicle through which to reach potential applicants . . . because of their longstanding involvement in sound resources management and their consciousness of the need for people to understand the science and art of good land use."

In April, letters outlining the proposed trip along with application forms were sent to the chairmen of the 26 districts totally or partially in the 14,670 square mile basin. After sufficient publicity and distribution to 4-H clubs, Scouts, Future Farmers, etc., completed applications were returned to each district chairman for selection of a district finalist. Extremely impressed by the keen interest and enthusiasm of the finalists, the commission decided to sponsor five students: Karen Frye, 18, of Washington, D.C.; Douglas Kint, 17, of Gettysburg, Pennsylvania; Elizabeth Harmison, 17, of Berkeley Springs, West Virginia; Matt Westbrook, 16, of Bowie, Maryland; and David Wiley, 16, of Purcellville, Virginia.

The students were accompanied by some of the staff of the commission and one of its commissioners; U.S. Representative Gilbert Gude of Maryland, who assisted in planning the trip; and representatives from the Izaak Walton League, the League of Women Voters, the C & O Canal Advisory Commission, and other environmental and conservation groups.

The source of the river is so small, explained Karen Frye, "you could spit more water than was coming out of the stream." The students had only to hike 500 yards before seeing the orange-brown water of acid mine drainage. "It drains through abandoned coal mines into the river and makes it so acidic fish can't live," reported Matt Westbrook. This barren environment is compounded by the dumping of waste by small towns lacking proper sewage treatment facilities.

Douglas Kint (right) and friend rest for a moment before starting the 12-mile trek to Harpers Ferry.



During the trip the students periodically tested the acidity of the river.

Hiking and biking 8 to 14 miles a day the first week, the group toured a paper mill in Luke, Maryland, and examined reclaimed surface-mined land that had been planted for future forests. An 18-year-old minimum age limit prevented four of the students from touring the Island Creek Coal Company in Bayard, West Virginia. While they surveyed the topside of the mine, Karen Frye and the rest of the group, donned hard hats and protective clothing to descend underground to examine the workings of an active coal mine. "It was one of the most exciting events of the trip," Karen said. Enthusiatic cooperation from industries along the river added much to the educational and environmental input.

Fred B. Givens, Jr., SCS civil engineer at Warsaw, Virginia, discusses methods of shore erosion control with the group at Stratford Hall.

All experienced canoeists, the students utilized their skills in a 12-mile canoe trip from Shepherdstown, West Virginia, to historic Harpers Ferry. They noted that as the geography of the river changed, so did the types of pollution. Muddied water entering from Antietam Creek indicated heavy farm and construction erosion upstream. Where the river was moderately shallow and slow, intense recreational use by motorized vessels such as outboards, houseboats, and modified hydrofoils caused shore erosion in areas due to heavy wave action. The gnarled, exposed roots of towering silver maples and sycamores measured the extent of soil loss.

Wider in places than the Mississippi River, the Potomac estuary provides livelihoods for many who live on its shores, but not without numerous environmental setbacks. At a meeting in Colonial Beach, Virginia, of the Potomac River Fisheries Commission, local oystermen, fishermen, and interested residents, the students learned of the devastating effect of unchecked upstream pollution on estuarine wildlife. Sediment deposits have dis-

rupted the delicate balance of freshwater and saltwater and covered oyster "starter" beds and breeding grounds for fish. Sewage overflows from urban areas can limit seafood harvests by rendering shellfish inedible.

Many local, regional, and state conservation and environmental groups assisted in providing information and tours of specific projects, as well as housing and meals. Cooperation from federal agencies came from the National Park Service, Environmental Protection Agency, the President's Council on Environmental Quality, and the Soil Conservation Service. SCS representatives were on hand to discuss soil erosion on a farmsite along the Monocacy River and explain the use of jetties in curtailing beach erosion at Stratford Hall, Virginia.

Trip highlights included visits to historic homes and sites along the Potomac. A hike-bike tour of Georgetown and Old Alexandria revealed that ports for tobacco, the colonial cash crop, were the basis for colonization of the two cities. The group dined at Gunston Hall, home of George Mason, as well as Stratford Hall, birthplace of Robert E. Lee. At Wakefield, Washington's birthplace, the students watched oxen till with a wooden plow as was the mode in the 1700's and sampled sugar cookies made from a Washington family recipe.

After 385 miles, the kids were sunburned, footsore, several pounds lighter, and in unanimous agreement about the invaluable knowledge they reaped from the trip. Considering the different types of pollution plaguing the river and the individual interest groups involved, David Wiley realized that you "can't make one solution work for everyone." Elizabeth Harmison was struck by an urgent need that "we all have to participate to save the river." Matt Westbrook probably summed up the group's feelings best when he said that the trip was, above all, "something that was going to be remembered forever." ♦

Elizabeth Harmison checks for correct paddle height before setting off down the Potomac River from Shepherdstown, West Virginia.

Conservation and Environment

by Russell E. Train

Administrator, U.S. Environmental Protection Agency, Washington, D.C.

Long before the word "environment" became part of the average citizen's lexicon, the conservation districts of America were making a major and largely unheralded contribution to this cause.

It was four decades ago this year that public agitation over the problems of dust storms, floods, and major erosion led to a new law declaring soil and water conservation and wise land use a national policy. Strong support from the White House opened the way for state authorization of today's 3,000 conservation districts. The importance of these districts, operating close to the problems and serving as both clearing houses and classrooms on conservation matters, cannot be overstated.

Today, we are again at a critical time in the conservation movement. It is no longer a question—if, indeed, it ever really was — of whether the nation should pursue conservation measures more vigorously, but where and how. Informed observers in the field of agriculture and in Congress have become increasingly concerned that we may, in fact, be recreating those conditions that led to such grave consequences 40 years ago in the Great Plains.

A study published by the Senate Agriculture Committee last March warned that the farm community may be creating another Dust Bowl. Among the conditions that could trigger this disaster, if a sustained drought should occur in the Great Plains, is the trend among farmers to shift from crop rotation to continuous wheat planting. In the drive to meet world food demand, we are converting vast areas of dry grassland into farmland, although there is little prospect that this acreage, stripped of its grass cover, can withstand the erosion from strong, relentless prairie winds.

The Soil Conservation Service estimates that nearly 9 million acres of unfarmed land were put to the plow last year, more than half of it idle since the droughts of the 1930's. The Service declares that less than half of this new land is being farmed with adequate erosion control and that some 60 million tons of topsoil were lost from the new acreage in 1974 alone.

Increased food production is, of course, not only a major national goal, but a matter of global necessity. Our exports of food and fiber help relieve a worldwide shortage and also make a substantial contribution toward our balance of payments. We need to increase this output, but not at the expense of the soil and not in a wasteful, short-term burst of careless farm management that exposes the land to long-term loss of its precious fertility. For the sake of future generations of Americans, and indeed for hungry people around the world, we must accompany our increased food production with sound principles of conservation, such as crop rotation, contour plowing, and stripcropping.

The Environmental Protection Agency (EPA) is especially concerned with this problem because sediment from land erosion also constitutes a serious pollution threat to the nation's lakes and waterways. As the Senate Agriculture Committee has pointed out, sediment is by far the major pollutant of surface waters. Our rivers and streams are not only turned muddy by the runoff of topsoil, but they are contaminated by the nutrients and pesticides carried there through the normal movement of wind and water. This represents a loss to the waterways and a loss to the land. Based on the 1972 market value of fertilizers, an estimated $800 million was lost that year in available nu-

Adapted from speech by Russell E. Train to the Upper Mississippi regional meeting of the National Association of Conservation Districts, July 16, 1975, in Bettendorf, Iowa.

trients, and the value of nutrient losses last year was at least 50 percent greater. At the same time, the outlays for dredging channels and harbors and coping with reservoir sedimentation, flood plain overwash, and turbidity removal push the cost hundreds of millions of dollars higher.

The technology of sedimentation control is well known. Some of the methods, indeed, date back thousands of years to terracing developed in the Orient. Watershed studies have demonstrated that good conservation practices can reduce sediment yield anywhere from 50 to 90 percent. And it is the conservation districts of America that form the front line in any such fight to maintain the quality of our croplands for future generations.

The term generally used to describe such problems as sediment runoff is "nonpoint sources" of pollution. A court decision this past March has placed in question the precise definition of "nonpoint sources," so I use it here in a general way, without spelling out how any specific discharge of a pollutant would be controlled at a state or federal level.

Since about 97 percent of the nation's land is rural, essentially all of it is a potential cause of this kind of problem in waterways. Three years ago, EPA's regional offices estimated that approximately 35 percent of the nation's waterways had water quality standards violations and that about 40 percent of these problems were attributable to nonpoint sources. More recently, it has been estimated that discharges from these sources have resulted in water quality degradation in every state. The runoff and sedimentation come not only from farms, but from forests and mines.

It should be emphasized that the technology of erosion control is no secret, and that prevention rather than cure is by far the most preferable course of action to deal with this form of pollution. We are disbursing billions of dollars in this decade for construction of wastewater treatment systems in America's cities, but unless an effort is made simultaneously to abate and control nonpoint source pollution, our tax dollars will not achieve the goal of clean waters that we all seek.

For most of the past four decades, erosion control programs relied to a large extent on voluntary action by landowners with technical advice from the National Association of Conservation Districts and federal and local agencies. However, during the 1960's there was growing realization that many erosion and sediment problems were being caused by housing, industrial, highway, and other construction activity, and that some other legal teeth would have to be put into the conservation effort. The result initially was a number of local ordinances to prevent erosion and sediment runoff.

Then in 1972, the Environmental Protection Agency, together with the Soil Conservation Service and the National Association of Conservation Districts (NACD) sponsored the development of model state legislation. As a sequel to this, a dozen states have enacted laws or taken executive action to control erosion and sediment, and 15 others have prepared new legislation.

So we have made a good beginning in this new enforcement activity to preserve America's farmland and to purify her waterways and lakes. EPA is now providing NACD with a grant to set up a manpower and training program in Washington to help staff state soil and water agencies and conservation districts to administer sediment and soil erosion control plans.

The foundation for EPA's authority is the Federal Water Pollution Control Act of 1972. One of its purposes is to identify and set forth methods to

control nonpoint sources of water pollution from agriculture and forestry. The section 208 program of the Act can be an effective tool for the states, which have primary responsibility for nonpoint sources management. Establishing nonpoint source management programs will be a part of the areawide planning process in designated 208 areas as well as a part of the state water quality management responsibilities in nondesignated areas.

The role of EPA will be to provide guidance to the states for initiating planning and carrying out nonpoint source management. The Agency also has the responsibility of reviewing and approving state plans in this area. We have recently issued revised state water quality management regulations and this will be followed by guidelines issued early next year. These will require states that have not already done so to begin planning for nonpoint source management programs.

For its part, EPA will encourage states and local agencies to use so-called best management practices. For the most part, effective land management practices are known and many are in daily use. But unfortunately these techniques are not being widely applied in many areas where serious water quality degradation is occurring. In addition, new techniques are continually being developed by the states, EPA, and other federal agencies, and these must be put to work as they emerge from the testing process. Each state will define its own set of such practices, tailored to meet specific local problems and environmental conditions.

These practices will be determined after study of many factors, such as local soil, rainfall, slope, as well as the kind of activity generating the pollution, such as farming, forestry, or construction. They will also take into account the water quality needs of the area basin. What this means is that for agriculture we are asking that water quality be incorporated into farm and watershed conservation plans.

It is obvious that this effort to control nonpoint source pollution calls for a partnership between EPA and the states. We will have shared responsibilities. We will expect the conservation districts and state soil and water commissions to assume leadership in the administration of this program. And the effort will call for close cooperation.

All federal and local governmental bodies must work together if we are to proceed in an orderly fashion to protect the land, as illustrated by a little problem we had with the Corps of Engineers regarding section 404 of the Water Act. I have made clear to the Corps that a farmer won't have to get a government permit every time he wants to plow his land. That was, of course, never contemplated by Congress in writing the Act, nor was there any intent to regulate plowing or soil disturbing practices on farms or forest lands under section 404.

In another area, we are cooperating with the U.S. Forest Service after establishing committees to oversee not only local planning programs but environmental protection in timber harvesting. These committees also will report on possible aid to section 208 agencies by the Forest Service.

We have been working with the Department of Housing and Urban Development and the Coastal Zone Management Program to incorporate our requirements in their programs. We also are endeavoring to include other agencies such as the Department of Transportation, which is a major source of federal support in construction work.

Earlier I spoke of the concern by members of Congress that American agriculture may be creating conditions reminiscent of the 1930's. Some of the distant memories of that period have been returning in recent time in other respects. While our economy now seems

to have weathered the worst of the current recession, the experience has prompted planners in Washington and elsewhere to consider a variety of ways in which government might create jobs if unemployment should persist.

Certainly many meaningful and positive public-service programs could be devised in the area of environmental protection and soil conservation. For example, rural roads and their drainage systems long have been recognized as major sources of sediment. Surfacing these roads would reduce the sedimentation load, and seeding and planting road shoulders would further reduce erosion.

In the field of construction, the construction of dikes, as well as reseeding of grass and planting of shrubs and trees, would help to control runoff and pollution in nearby waterways.

The problem of combined storm and sewage mains, which contributes heavily to river pollution during storms due to overflows, could be corrected by public works programs.

An increased program of reforestation and of tree plantings as windbreaks, particularly in areas where erosion and sediment pollution are evident, offers another opportunity. We have seen in the Middle East and in the Mediterranean lands how formerly green fertile regions have become barren, their topsoil washed away, their peoples' standard of living depressed, all because of thoughtless overcutting and overgrazing and neglect of conservation measures over the centuries. I can think of no national need more fundamental or imperative than the preservation of our land from a similar fate.

The plentiful supply of cheap energy, which made possible the impressive productivity of our agriculture in recent decades through intensive use of fertilizer and pesticides, has vanished. The U.S. Geological Survey last June disclosed that the nation may have only half the undiscovered oil and gas resources thought to exist a year ago.

This means that we must, for survival's sake if nothing else, find ways of managing our environment that conserve not only the land but energy and its related components of fertilizer, pesticides, and water. In doing this we must also avoid practices that render the natural world that supports us increasingly inhospitable, if not uninhabitable. We need, in short, to develop an agriculture that we can live with over the long term, that can sustain us over the next few decades, especially through the end of this century when the world population will probably double and the pressures upon our productive capacity, as well as that of the world, will become increasingly severe.

Such an agriculture must seek to conserve its resources, especially those that cannot be renewed. It must place the highest priority upon retaining our fertile topsoil, whose supply is finite and which cannot be replaced over aeons of time.

No group has a greater stake than landowners in protecting their environment from the ravages of nature and careless men. And no environmentalist can fairly say he supports his cause unless he includes the preservation of America's farmlands and forests through wise conservation measures.

Conservationists and environmentalists are going to need each other in the years ahead. None of us can afford to go it alone. Thanks to the far-reaching 1935 act that paved the way for conservation districts, and the 1972 Water Act that made it possible for EPA to work with the conservation movement in helping to preserve the land, we have the legislative framework for close cooperation. We share common problems and common goals, and, based on our experience thus far, it will be a successful partnership. ♦

'Limits'

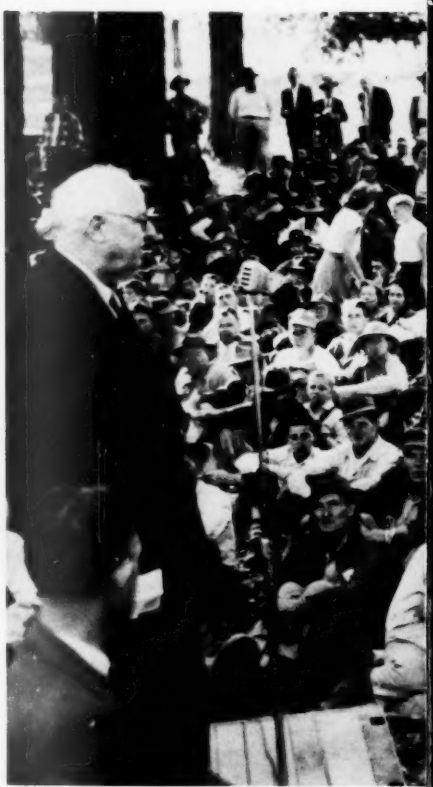
A new slide show, prepared for the Bicentennial, traces the development of the conservation idea in America during the last 200 years.

"As we begin our third 100 years as a nation, we begin with the hard-earned knowledge that there are limits to our resources, and limits to the way we can treat them."

So states "Limits," the new Bicentennial slide show prepared by the Division of Information, Soil Conservation Service.

"Limits" traces the history of the conservation movement in America, opening with settlers in the New World, when resources seemed limitless.

The slide series will be available in December 1975 from the Office of Communication, Photography Division, U.S. Department of Agriculture, Washington, D.C. 20250. The price of the 80-slide set is $16.50, which includes the narration on a cassette.



From "Limits": At left, a scene of severe erosion. Below, Hugh H. Bennett, first chief of SCS, addresses a group at a soil conservation demonstration on a Kentucky farm in 1948. At top right, stripcropping on an Ohio farm.

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Silver Creek Watershed

by Gorgie E. Hofma
SCS, Huron, South Dakota

Twenty years ago, a farmer in southeastern South Dakota summed up a problem he and neighboring landowners had: "We get a lot of water here without any rain."

Pinpointing the problem, an agreement among the farmers that "something must be done" to protect cropland from reoccurring heavy runoff resulted in the Silver Creek Watershed Project—a project which covers 20,660 acres and includes six floodwater retarding dams.

Today, the Silver Creek Watershed Board of Managers reports that the project provides protection for 52 landowners to utilize fully the 4,200-acre flood plain. Conservation land treatment measures reduce soil erosion about 27,000 tons per year and reduce sediment entering the structures of streams by 2,700 tons annually.

The watershed project came about with the help of a determined and enthusiastic Watershed Steering Committee and Board of Supervisors of the Minnehaha Conservation District.

Faced with heavy runoff from the uplands and three crop failures in 10 years because of

Curtis Eggers (right), chairman of the board of managers of the Silver Creek Watershed District, and Nils Aspaas, the first chairman of the board, at the dedication of the Silver Creek Watershed Project.

too much water, the committee and the board found strong support in the area for a watershed program administered by the Soil Conservation Service under Public Law 566.

A report from one of the early planning meetings of these two groups notes: "Sheet erosion can be checked by our land treatment program, but we definitely need detention dams and supporting conservation practices to keep excess water off valuable bottomland. Pastureland could be cropped if floodwaters could be kept off. Average yields on the bottomland, if protected, would be much higher than on upland. Annual fence and road damage is high, particularly where the sharp draws empty onto the flat land."

Planning authorization for the Silver Creek watershed was received in 1955 and the project was approved in 1957 for construction. The watershed district was organized the next year.

A "Who's Who in Cooperation" resulted, with interest and cooperation from the Extension Service, Agricultural Stabilization and Conservation Service, South Dakota Department of Game, Fish, and Parks, U.S. Fish and Wildlife Service, South Dakota Water Resources Commission, South Dakota Conservation Commission, Big Sioux Watershed Association, county commissioners, township boards, city commissioners, Sioux Falls businesses, commercial clubs, and the backbone of the entire endeavor, the landowners.

By 1959, 81 percent of the landowners in the project area were either installing or had completed needed conservation practices. Four of the six floodwater retarding dams were completed by 1962. During the next 10 years, problems involving location of dams and obtaining easements halted construction work, but, in 1972, these were resolved and the dams were completed.

"We are a goal-oriented people," said Odilo Hensen, chairman of the Minnehaha Conservation District Board of Supervisors. "For our type of diversified farming with most of the crops and hay produced being used in our livestock industry, we are looking forward to realizing 30 to 35 percent increased production now that we can plant on time and can use fertilizers wihout the fear of them being washed away."

Fence damage, removal of trash, and weed infestation previously cost a landowner $7 to $8 an acre. The project is estimated to reduce damage to fences, roads, and other nonagricultural property 65 percent.

Channel work was planned to preserve oxbows and trees, explains Charles D. Culhane, SCS district conservationist for Minnehaha Conservation District. Sediment traps provide pool areas for wildlife, and native grasses supply food and cover for birds and animals.

Work will continue in the watershed area to insure continuing benefits. The channel must be kept free of willows that would clog the channel floor. The artificial inlets in the channel banks that return minor overflows to the channel must be maintained and the grazing of native grasses along the channel must be controlled. Terraces need to be maintained, contour farming continued, and feedlots need to be planned to prevent pollution.

As one farmer in the flood plains commented, the sponsors and landowners have an increasingly important role in encouraging application of conservation measures to further preserve and enhance land and water resources in the Silver Creek watershed. ♦

Nesting News for Wood Ducks

by Frank Jeter, Jr.

Information officer, SCS, Raleigh, North Carolina

Wildlife enthusiasts in North Carolina's populous Piedmont are doing something about the "housing shortage" for wood ducks.

More than 100 nesting boxes were put up last spring and 200 more this fall in six counties—Alamance, Caswell, Chatham, Guilford, Orange, and Rockingham.

The idea for the boxes gained momentum this year when the Wildlife Committee of the North Central Piedmont Resource Conservation and Development (RC&D) Project made constructing and distributing 100 nesting boxes a goal by spring.

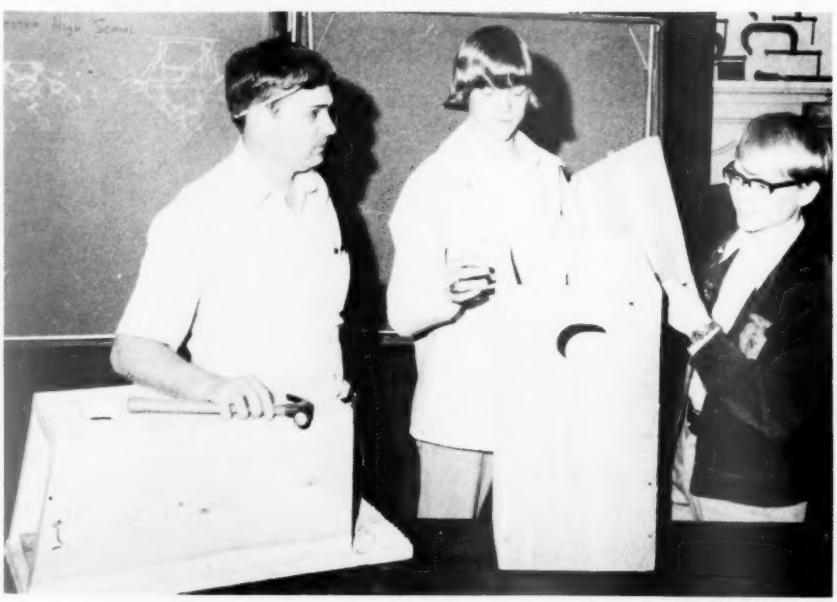
The committee chairman, J. W. Busick, is a vocational agriculture teacher and adviser to a Future Farmers of America (FFA) chapter. Concerned about the increasing encroachment of human beings and the shortage of natural nesting sites for wood ducks in the area, Busick encouraged both the committee and the chapter to help out.

Randy Porterfield, district wildlife biologist with the North Carolina Wildlife Resources Commission, provided technical assistance on the proper installation of the boxes. The commission also started a banding program to develop statistics on duck populations and migration habits.

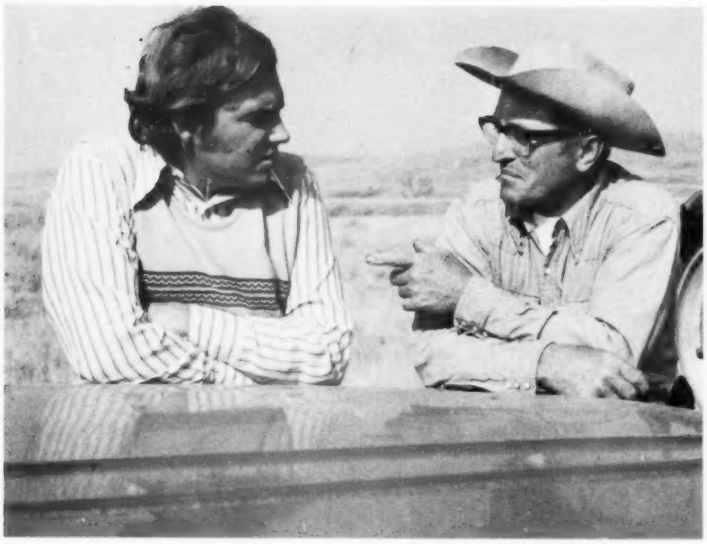
The RC&D Wildlife Committee has provided funds for 100 boxes, which were built by 65 members of the FFA chapter. The students held barbecue dinners to raise money to buy cypress lumber for the boxes and were later reimbursed by the committee.

The boxes are being sold to landowners at cost—$5 each. The North Carolina Wildlife Resources Commission will also reimburse an organization for building boxes.

"The program is a very beneficial learning experience for young people," Busick said. "They are really learning something about the leading duck in North Carolina—its habits, its needs, and what it means to the people of our state." ♦



Wood duck nests have become a major project with the Western Alamance FFA chapter in North Carolina this year. Chapter Adviser J. W. Busick (left) has helped the students in building more than 120 nests.



Author Randy Patefield discusses range management with Jerome Lemmer.

Livestock Pipeline Aids Great Plains Ranchers

by Donald E. Stearley and Randy Patefield*

District conservationist, SCS, Lexington, Nebraska, and district conservationist, Lebanon, Indiana

On the eve of the worst drought in the Great Plains in 20 years, three Nebraska ranchers were confronted with the frightening situation of a livestock well going dry.

They had only one good well left and erosion problems soon began as cattle overgrazed and formed trails to the water facilities.

But by the time the drought struck a few months later, these men were watching their cattle drink from 10 stock tanks.

The changeover began when the three ranchers, Lyle Talbot, Niles Wallace, and Jerome Lemmer, visited the Soil Conservation Service office at Lexington, Nebraska. Talbot and Wallace, who have 300 steers, had reached an agreement with Lemmer to hook into his well, put in the year before.

They qualified for technical help and cost sharing through the Great Plains Conservation Program (GPCP) and the Rural Environmental Assistance Program (REAP) for developing a livestock watering system. With assistance from SCS, they drew up ranch plans for proper grazing use and proper livestock distribution.

They buried 3½ miles of 2-inch plastic pipe below the freeze line—48 inches deep. The pipes lead from Lemmer's well to 10 steel tanks spotted for maximum grazing distribution on the land owned by Talbot and Wallace. The stock tanks have float-controlled valves which keep them full at all times.

Total cost of the project was $12,960, of which $5,393 was cost shared under GPCP and $1,990 under REAP.

Lemmer, who waters 550 head of cattle on his 2,240 acres plus additional rented acres, keeps a standby generator for emergencies. His main well is 330 feet deep and has an electric switch submersible pump and pressure tank.

The three newest Great Plains cooperators brought the total of ranchers installing similar systems in Dawson County to 14. The pipelines get water to many unused areas and relieve concentrated grazing pressures around limited main water supplies.

"Even in good years, cattle will bunch up around a central tank," said Warren E. Peden, Jr., SCS range conservationist for the Nebraska Panhandle area.

"Livestock trample down the grass, form paths to the watering facilities, and begin a gully or blowout. Spreading water facilities around prevents this bunching. Cattle normally will form little groups, not large herds."

When used in combination with other range management practices such as proper numbers of stocking, range rotation, placing salt locations away from water sources, and cross fencing, these pipelines facilitate maximum range use without abuse. ♦

* Formerly soil conservationist, SCS, Lexington, Nebraska.

Iowa Farmers Plant 'Acres for Wildlife'

by Jim Allen

District conservationist, SCS, Charles City, Iowa*

Normally, fewer than 10,000 trees are planted in a year in Winnebago County, Iowa.

Through a cooperative "Acres for Wildlife" program last spring, however, more than 70,000 trees and shrubs were planted to provide wildlife habitat on odd tracts on 80 farms in the county.

The project was coordinated by the Winnebago County USDA Rural Development Committee. The committee, composed of federal, state, and county agencies, included representatives from the County Conservation Board, Agricultural Stabilization and Conservation Service, Iowa Conservation Commission, Extension Service, Rural Electric Cooperative, and Soil Conservation Service.

The committee began planning in January. Some 20,000 coniferous plants were donated by Winnebago Industries of Forest City, and cash contributions for another 52,000 trees and shrubs were received from other county businesses, banks, civic organizations, and individuals. These were bought from the Iowa Conservation Commission's State Forest Nursery in Ames.

With enough trees and shrubs to plant more than 100 acres, the committee sought landowners to provide odd areas on their farms for the wildlife habitat plantings.

Through a series of newspaper articles, radio programs, and a newsletter sent out by the Agricultural Stabilization and Conservation Service, farmers were informed of the program. Farmers could fill out a card and send it to the Extension Service, listing the landowner's name, approximate size of the tract to be planted, and the present land use. Landowners agreed to prepare some of the land for planting and not to destroy the plantings.

More than 80 farmers donated 118 acres of land for the program. Individual planting tracts ranged from one-tenth of an acre to 16 acres, including steep side hills, corners of land cut off by railroads, open ungrazed woodlands, land near ponds, marshy areas, and areas along drainage ditches.

Areas donated were divided among Rural Development Committee members for study. Each member determined access to the tract, the type of vegetation present, whether a mechanical tree planter could be used in the area, and whether the planting site was

* Formerly district conservationist, SCS, Thompson, Iowa.

Two members of the tree planting crew, hired with Federal Public Employment Program funds, plant "Acres for Wildlife."

dry, moderate, or wet. A tentative plant allocation was made at this time, using a guide prepared by the Iowa Conservation Commission and SCS.

To help the plants compete with existing and new vegetation, granular simizine was used for some weed control. A contact herbicide and improvised shield device eliminated grassy weed competition where existing vegetation couldn't be removed mechanically.

"With more than 80 different planting locations scattered over the county and 72,000 plants, we needed a fast, efficient means of getting the donated tracts planted," said Rock Bridges, wildlife biologist with the Iowa Conservation Committee. "We divided the county into four sectors and used a separate tree planter and crew for each area."

Volunteer labor from 4-H clubs, Future Farmers of America chapters, Boy and Girl Scouts, school groups, and civic organizations helped with the plantings. About 150 volunteers helped plant areas that tree-planter crews couldn't reach. The Winnebago County Conservation Board obtained Federal Public Employment Program funds to hire six people. These workers allocated plants, planted, and helped with weed control and watering from April through June.

Dennis Castle, county executive director of the Agricultural Stabilization and Conservation Service, commented that the program takes advantage of odd, idle areas which dot the county.

"By concentrating our planting efforts on those areas that remain principally noncropland today, we can boost the overall wildlife population by giving them a better home," he said. ♦

Pondweed Project

by David W. Patterson
Biologist, SCS, Red Bluff, California

"How can I get rid of the weeds in my ponds?"

That question is probably one of the most frequently asked of the Soil Conservation Service by pond owners.

For Frank Hurd, owner of a fishing resort near Redlands, California, the question was particularly urgent. Pondweeds had reduced fishing access on his ponds for several summers and fishermen at his pay lakes complained about the weedy condition of the ponds and the small size of the bluegills.

A cooperator with the San Gorgonio Resource Conservation District, Hurd contacted SCS. After discussing several possible solutions, he decided to try the use of fertilizer, a method which has had limited use in California although it is popular in the South.

By fertilizing his ponds, Hurd hoped to establish a bloom of phytoplankton which would shade out the sago pondweed by preventing sunlight from penetrating to the bottom of his ponds.

Hurd selected this method for its availability, relative low cost, and ease of application. He decided that a weed mower and the manpower needed to control vegetation mechanically through the summer would be too costly and that aquatic herbicides could be deterimental to the alfalfa hay crop he irrigated with pond water.

With technical assistance from SCS, Hurd fertilized his ponds from March to October and has achieved virtually complete control of the sago pondweed.

The first application was made in March after the morning surface temperature reached 60 degrees. Two hundred pounds of 8-8-4 fertilizer were applied per surface acre of water.

This rate of application was subsequently reduced by half or more after a satisfactory bloom of phytoplankton was established. Applications continued at 2-week intervals to keep visibility to about 20 inches.

In mid-May, an application of 16-20-0 was tried to see if potash could be eliminated and yet maintain a satisfactory bloom in the ponds. This succeeded, and Hurd was able to reduce costs and the use of unnecessary nutrients. ♦

League of Women Voters States Position on Land Use

The League of Women Voters of the United States, after nearly 3 years of study by local leagues, announced its position statement on land use earlier this year, noting that land ownership, whether public or private, implies responsibilities of stewardship.

"In decisions about land use, public as well as private interests should be respected, with consideration for social, environmental, and economic factors," the national board stated last spring in *The National Voter*, the League's quarterly publication.

"Each level of government must bear appropriate responsibility for planning and managing land resources. It is essential at a minimum that an appropriate level of government determine, regulate, and guide critical activities and the use of critical land areas. To guarantee responsive and responsible governmental decisions, citizen participation must be built into the planning and management of land resources at every step.

"To these ends, the federal government should exert leadership to:

—encourage formulation of land resource goals;

—develop policies and standards for conserving land resources;

—foster coordinated planning and management of land resources by all levels of government;

—foster cooperation among agencies and among levels of government in establishing mechanisms that encourage consideration of all public and private rights and interests affected by land use decisions;

—minimize conflict of interest on the part of those who make decisions about land resources;

—ensure more effective citizen participation through such measures as adequate funding for citizen information and review." ♦

Outdoor Classrooms on the Outer Banks

Living year-round in a community where people drive hundreds of miles just to enjoy a week or two of vacation, youngsters in North Carolina's fabled Outer Banks are developing an environmental education program to heighten their own appreciation and enjoyment of the area.

Both Kitty Hawk Elementary School and the Cape Hatteras School are cooperators with the Pamlico Soil and Water Conservation District and have been guided in outdoor classroom activities by supervisors of the district and SCS personnel from the Manteo Field Office.

At Kitty Hawk, students decided to improve the school location and constructed walkways, posted nature signs, and are studying freshwater ecology in their manmade pond, according to Jesse Newman, chairman of the Dare County Board of Supervisors.

At Cape Hatteras, Mrs. Yancey Foster, first woman supervisor elected in North Carolina, helped start the program. Students have worked to stabilize ground cover on their ball field, with help from SCS, and plan to build and distribute bird houses in the community for purple martins. — David Hardee, conservation technician, SCS, Manteo, North Carolina. ♦

SOIL CONSERVATION Index, Vol. 39 (August 1973 to July 1974). Single copies are available by request from the magazine office in Washington, D.C.

Conservation Tours Attract 3,500 North Dakota Students

Conservation tours for seventh graders are gaining in popularity in North Dakota. Nearly 2,000 students participated in tours in 11 counties last spring, and an estimated 1,500 students will attend tours in 9 more counties this fall.

The tours are a cooperative effort of the local school district, soil conservation district, and businessmen, as well as the Soil Conservation Service, Extension Service, North Dakota Game and Fish Department, U.S. Fish and Wildlife Service, U.S. Forest Service, North Dakota Forest Service, Agricultural Research Service, and Farmers Home Administration.

The programs for the tours vary somewhat but usually include onsite study of soil and its characteristics, viewing of tree plantings, and a discussion of the kinds of plantings and their benefits, and examples, as well as discussion, of the need and advantages of residue management, stripcropping, range management, wildlife management, and other conservation work.

The various schools in a county usually cooperate to put on one conservation tour at a central location.

The tours usually last 3 hours, followed by a lunch provided by the sponsors, and a short quiz.

"Most receive good grades, due to the attentiveness and interest of the students," comments E. R. Umland, SCS forester in Bismarck, North Dakota. ♦

Christmas Trees In Colorado

In eastern Colorado, where the average annual precipitation is only 15 inches, Christmas trees are an unusual crop. When Dick Loos (above) of Sterling, Colorado, decided to market Scotch pine for additional income, he planted the trees in the flat channel terraces to improve moisture conditions. The plantings, started in 1970, have been successful, and Loos will be marketing 400 of his 1,200 Scotch pine trees for the first time this Christmas season. A cooperator with the South Platte Soil Conservation District, Loos has his 160-acre farm completely terraced. A windbreak of some 5,000 trees surrounds his farmstead. A part-time farmer, Loos teaches German at Sterling High School. ♦

Bird Booklets

Two new SCS booklets in the "Invite Birds to Your Home" series have been published for the Northwest and the Southeast.

"Invite Birds to Your Home — Conservation Plants for the Southeast" (PA-1093) was written by Olan W. Dillon, Jr., biologist in the SCS South Technical Service Center in Fort Worth, Texas, and covers the Southeast from the Carolinas to Florida and west to eastern Oklahoma and Texas.

"Invite Birds to Your Home — Conservation Plantings for the Northwest" (PA-1094) was written by L. Dean Marriage, biologist in the SCS West Technical Service Center in Portland, Oregon, and covers Washington, Oregon, and California north of San Francisco.

Each color booklet contains a chart on plants preferred by familiar birds in the region as well as detailed information on plantings and landscape designs to attract songbirds.

Individual copies are available from local SCS offices in the specific region covered by the pamphlet. Additional copies are available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, at 75 cents a copy.

Booklets in the series were published earlier for the Midwest and the Northeast. ♦

Soil surveys

California

Nevada County Area. By Lynn A. Brittan. 1975. Soil Conservation Service and Forest Service in cooperation with University of California Agricultural Experiment Station. 105 pp., illus.; maps.

Colorado

Gunnison Area (Parts of Gunnison, Hinsdale, and Saguache Counties). By William R. Hunter and Clayton F. Spears. 1975. Soil Conservation Service in cooperation with Colorado Agricultural Experiment Station. 85 pp., illus.; maps.

Illinois

Pope, Hardin, and Massac Counties. By Walter D. Parks. 1975. Soil Conservation Service and Forest Service in cooperation with Illinois Agricultural Experiment Station. 126 pp., illus.; maps.

Indiana

Crawford County. By Robert C. Wingard, Jr. 1975. Soil Conservation Service and Forest Service in cooperation with Purdue University Agricultural Experiment Station. 60 pp., illus.; maps.

Mississippi

Harrison County. By William I. Smith. 1975. Soil Conservation Service and Forest Service in cooperation with Mississippi Agricultural and Forestry Experiment Station. 80 pp., illus.; maps.

Missouri

Scotland County. By F. C. Watson. 1975. Soil Conservation Service in cooperation with Missouri Agricultural Experiment Station. 45 pp., illus.; maps.

North Dakota

Bowman County. By Donald D. Opdahl, William F. Freymiller, Lawrence P. Haugan, Richard J. Kukowski, Bertram C. Baker, and Joseph G. Stevens. 1975. Soil Conservation Service in cooperation with North Dakota Agricultural Experiment Station. 140 pp., illus.; maps.

Oklahoma

Mayes County. By Dock J. Polone, Claude T. Newland, and Bill G. Swafford. 1975. Soil Conservation Service in cooperation with Oklahoma Agricultural Experiment Station. 92 pp., illus.; maps.

Meetings

Tennessee

Montgomery County. By Eugene T. Lampley, John B. Cothran, Lincoln E. Davis, Robert B. Hinton, Olin L. North, and Paul T. Steele. 1975. Soil Conservation Service in cooperation with Tennessee Agricultural Experiment Station. 63 pp., illus.; maps.

Texas

Panola County. By Raymond Dolezel. 1975. Soil Conservation Service in cooperation with Texas Agricultural Experiment Station. 55 pp., illus.; maps.

Sherman County. By Billy R. Stringer. 1975. Soil Conservation Service in cooperation with Texas Aricultural Experiment Station. 42 pp., illus.; maps.

Utah

Box Elder County (Eastern Part). By Raymond S. Chadwick, Marvin L. Barney, Delyle Beckstrand, Ludene Campbell, James A. Carley, Earl H. Jensen, Calvin R. McKinlay, Sherman S. Stock, and Howard A. Stokes. 1975. Soil Conservation Service and United States Department of the Interior, Fish and Wildlife Service, Bureau of Land Management, in cooperation with Utah Agricultural Experiment Station, 223 pp., illus.; maps.

November

2–5 *Sprinkler Irrigation Association, Scottsdale, Ariz.*
3–7 *American Society of Civil Engineers Convention, Denver, Colo.*
4 *American Seed Trade Association Farm Seed Conference, Kansas City, Mo.*
9–14 *National Water Resources Association, Honolulu, Hawaii*
10–18 *National Grange, Columbus, Ohio*
11–14 *Future Farmers of America, Kansas City, Mo.*
12–13 *Fourteenth Annual Purdue Air Quality Conference, Indianapolis, Ind.*
16–19 *American Bankers Association, National Agricultural and Rural Affairs Conference, Houston, Tex.*
16–20 *American Institute of Chemical Engineers, Los Angeles, Calif.*
17–20 *American Association of State Highway Officials, St. Louis, Mo.*
30–Dec. 2 *American Society of Farm Managers and Rural Appraisers, Inc., Dallas, Tex.*

December

2–5 *Western Forestry Conference, Vancouver, British Columbia*
3–5 *Twenty-second Annual Meeting Keep America Beautiful, Inc., Washington, D.C.*
4–5 *National Associaion of Manufacturers, New York, N.Y.*
8–12 *American Geophysical Union, San Francisco, Calif.*
9–11 *American Seed Trade Association Corn & Sorghum Industry Research Conference, Chicago, Ill.*
11–12 *American Seed Trade Association Soybean Research Conference, Chicago, Ill.*
12–17 *Second World Congress on Water Resources, New Delhi, India*
15–18 *American Society of Agricultural Engineers, Chicago, Ill.*
28–30 *Joint Meetings—American Agricultural Economics Association and American Economic Association, Dallas, Tex.*

January 1976

13–17 *American Seed Trade Association Garden Seed Conference, San Francisco, Calif.*
14–15 *National Council of Farm Cooperatives, Washington, D.C.*
19–22 *National Wool Growers Association, Wichita, Kans.*
19–22 *North American Game Breeders and Shooting Preserve Association Convention, Milwaukee, Wisc.*
27–30 *American National Cattlemen's Association, Phoenix, Ariz.*

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